Supplementary Information

Halogen Regulation of Inorganic Perovskites toward Robust Triboelectric Nanogenerators and Polarity Series

Xueping Yu,[a, b, #] Yudi Wang,[b, #] Jihua Zhang,[a] Jialong Duan,[b] Xiya Yang,[b, *] Liming Liu,[c, *] and Qunwei Tang [b, *]

[a] State Key Laboratory of Electronic Thin Films and Integrated Devices, University of Electronic Science & Technology of China, Chengdu, Sichuan 610054, PR China;

[b] Institute of New Energy Technology, College of Information Science and Technology, Jinan University, Guangzhou 510632, PR China;

[c] Zhongshan Branch of State Key Laboratory of Electronic Thin Films and Integrated Devices, University of Electronic Science and Technology of China, Zhongshan Institute, Zhongshan, Guangdong, 528402, PR China

E-mail address: xiyayang@jnu.edu.cn; liulmxps@126.com; tangqunwei@jnu.edu.cn

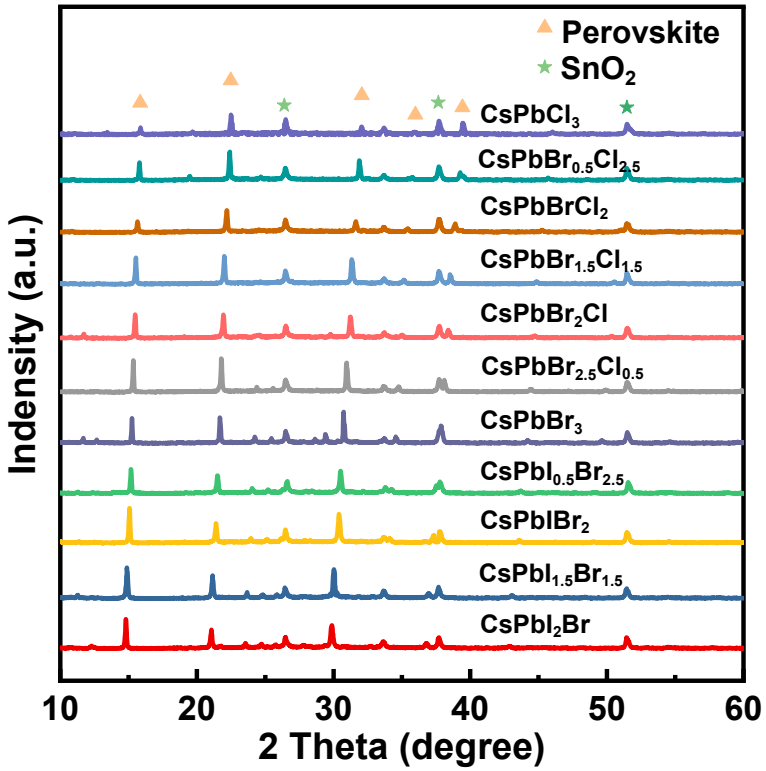

Figure S1. XRD patterns of the prepared inorganic perovskite films.

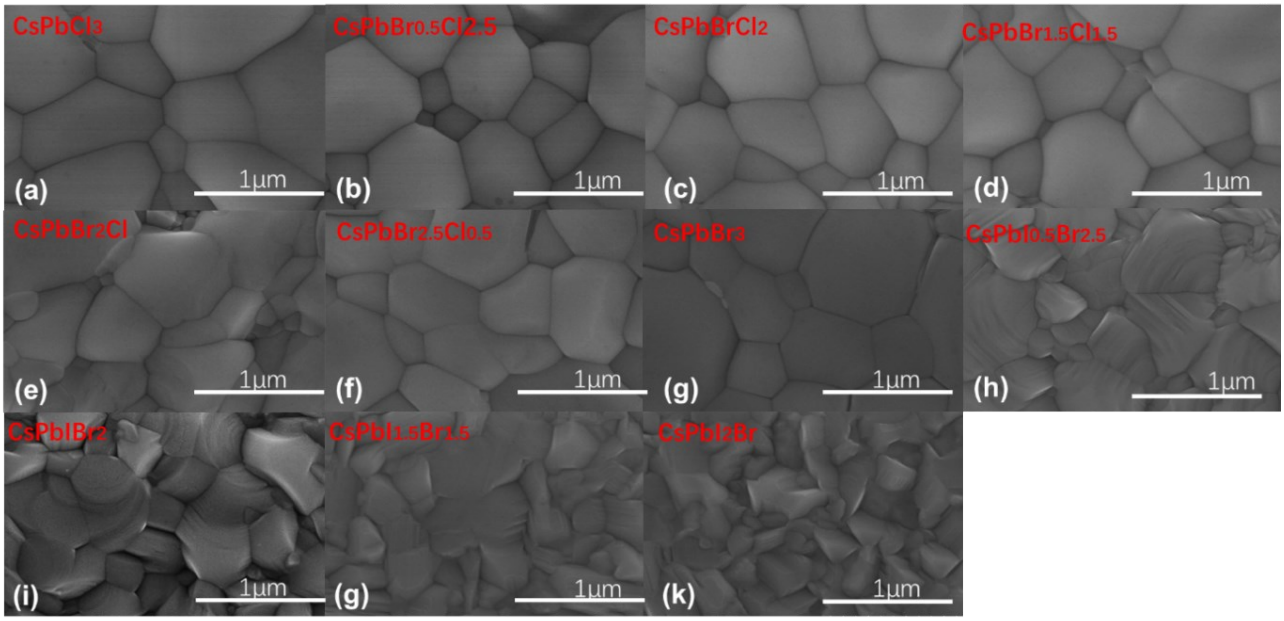

Figure S2. Top-view SEM images of inorganic perovskite films.

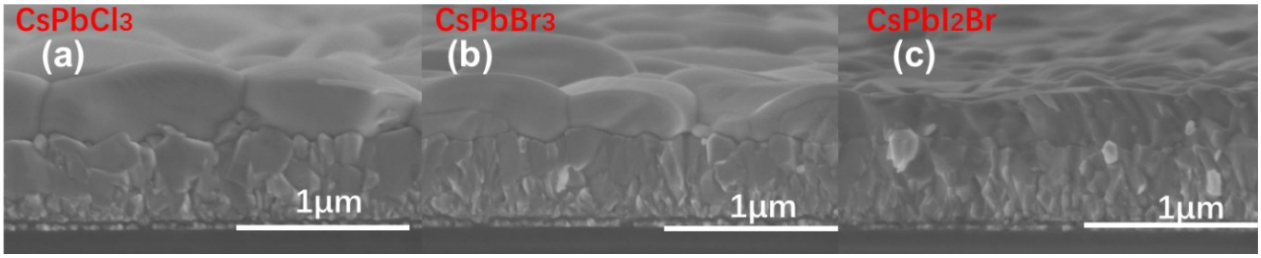

Figure S3. Cross-section SEM images of $CsPbCl_3$, $CsPbBr_3$ and $CsPbI_2Br$ perovskite films.

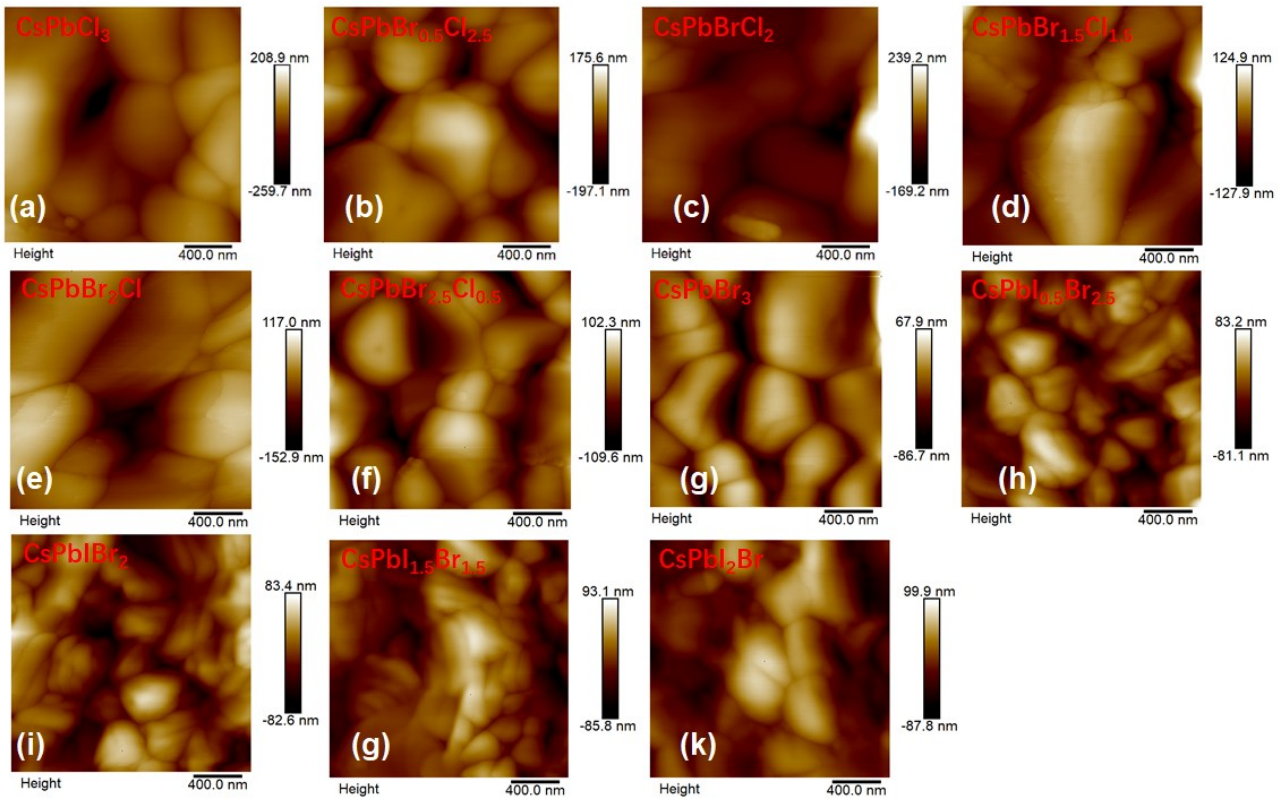

Figure S4. Surface AFM images of the inorganic perovskite films.

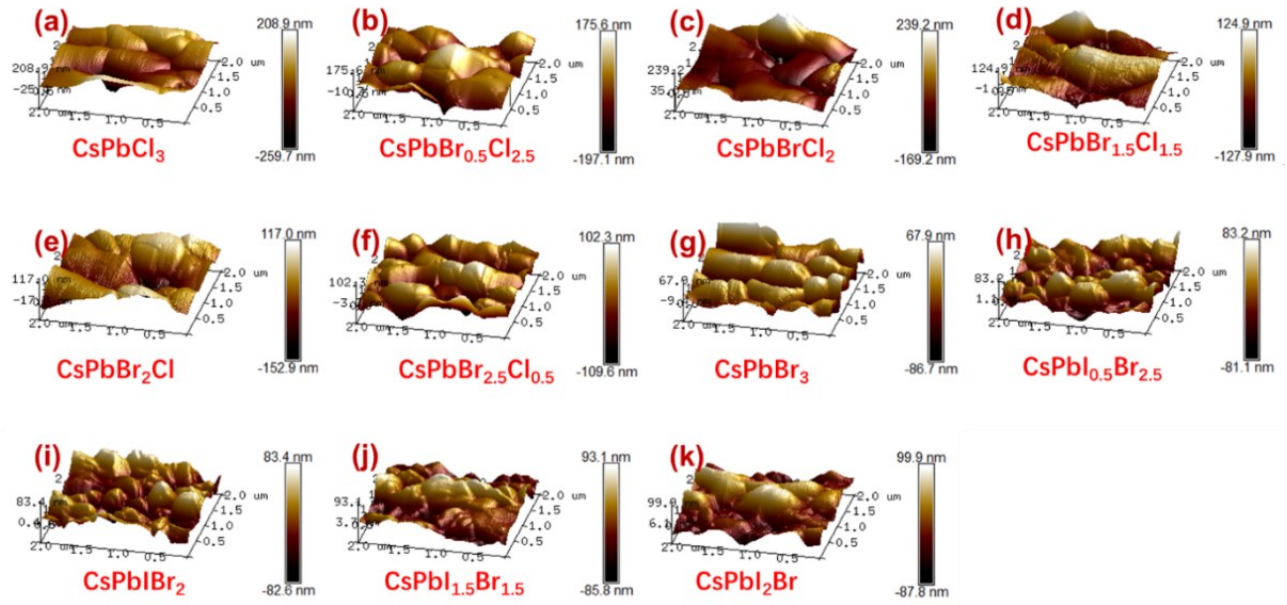

Figure S5. 3D height AFM images of the inorganic perovskite films.

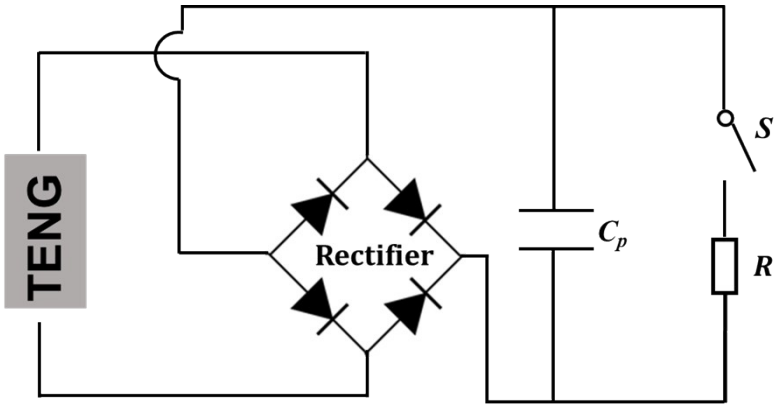

Figure S6. Circuit diagram for rectifying the alternating-current (AC) of perovskite TENG to direct-current (DC) output signals.

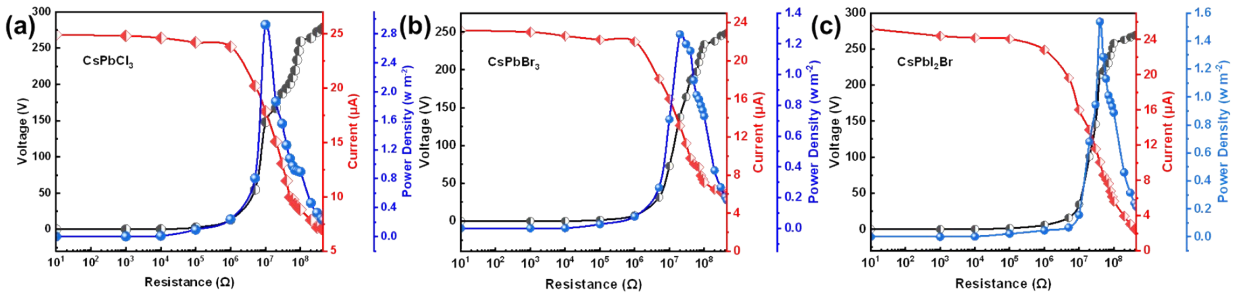

Figure S7. Voltage, current and power density outputs of (a) $CsPbCl_3$, (b) $CsPbBr_3$, and (c) $CsPbI_2Br$ perovskite TENGs at various external load resistances.

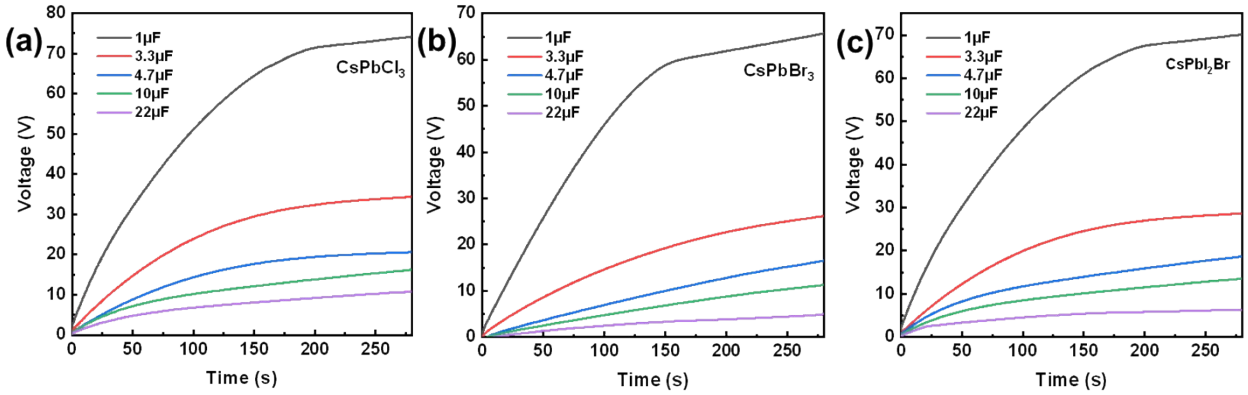

Figure S8. The charging curves of (a) $CsPbCl_3$, (b) $CsPbBr_3$, and (c) $CsPbI_2Br$ perovskite TENGs for different capacitances.

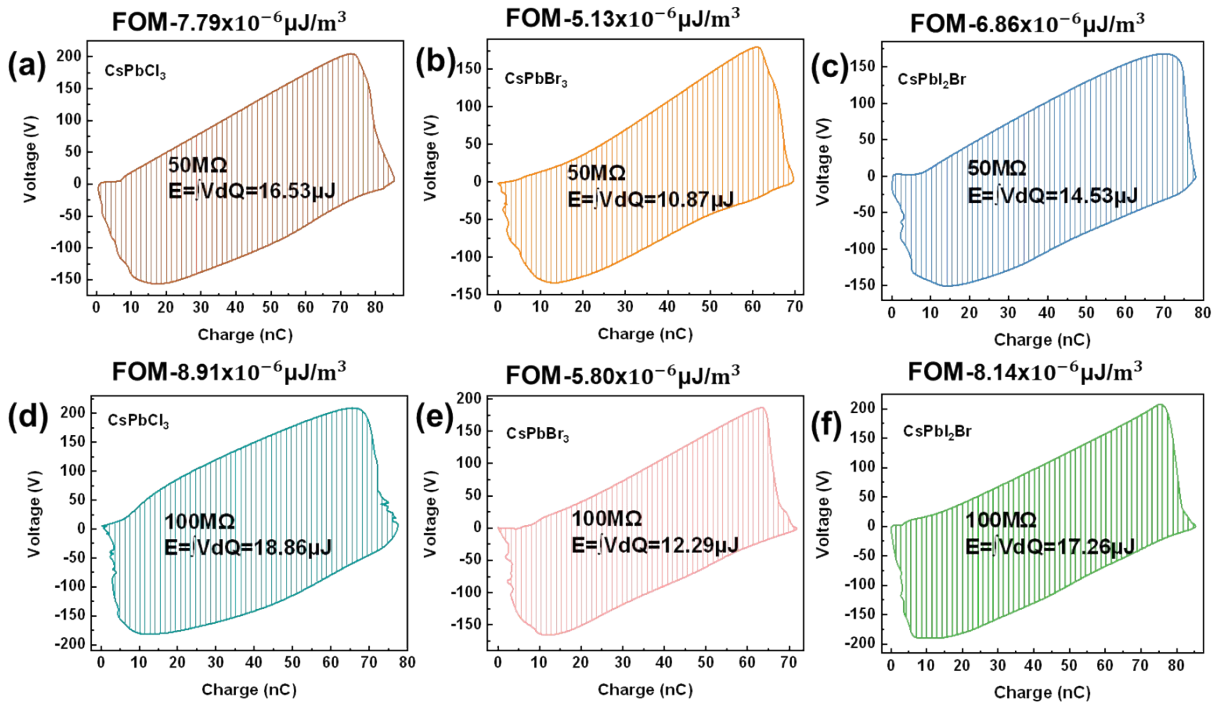

Figure S9. The V-Q plots of the largest possible output energy per "press-release" cycle of TENGs based on (a,d) $CsPbCl_3$ (b,e) $CsPbBr_3$ (c,f) $CsPbI_2Br$ at external load resistance of (a,b,c) 50 MΩ and (d,e,f) 100 MΩ, as well as the corresponding FOM values.

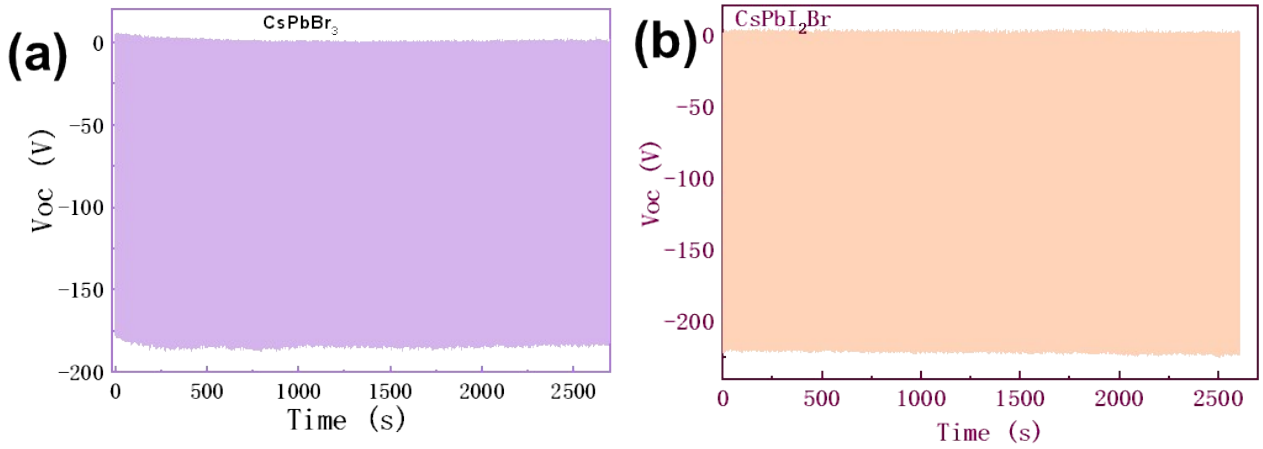

Figure S10. Continuous stability tests for (a) $CsPbBr_3$ and (b) $CsPbI_2Br$ TENGs over 2600 s.

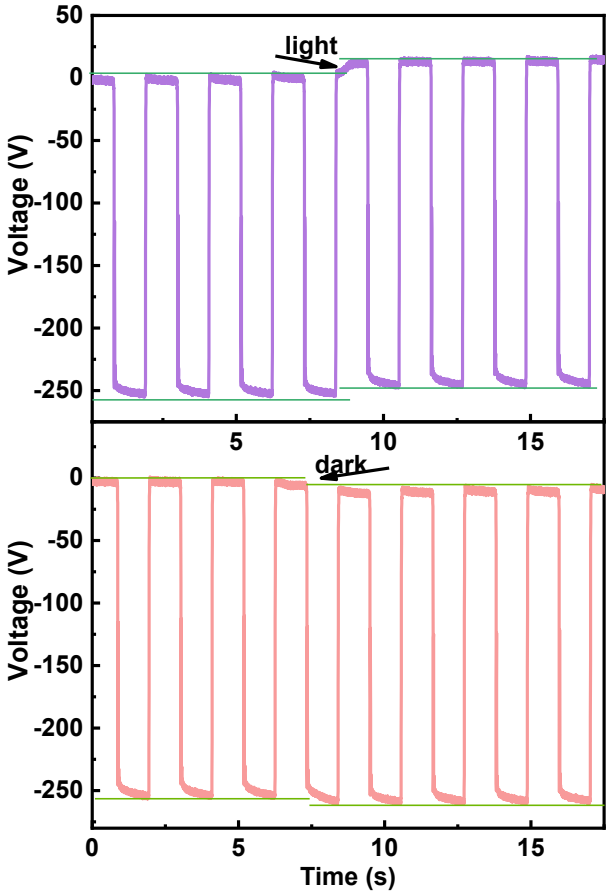

Figure S11. The output performances of $CsPbCl_3$, $CsPbBr_3$, and $CsPbI_2Br$ perovskite-TENGs both in dark and light conditions

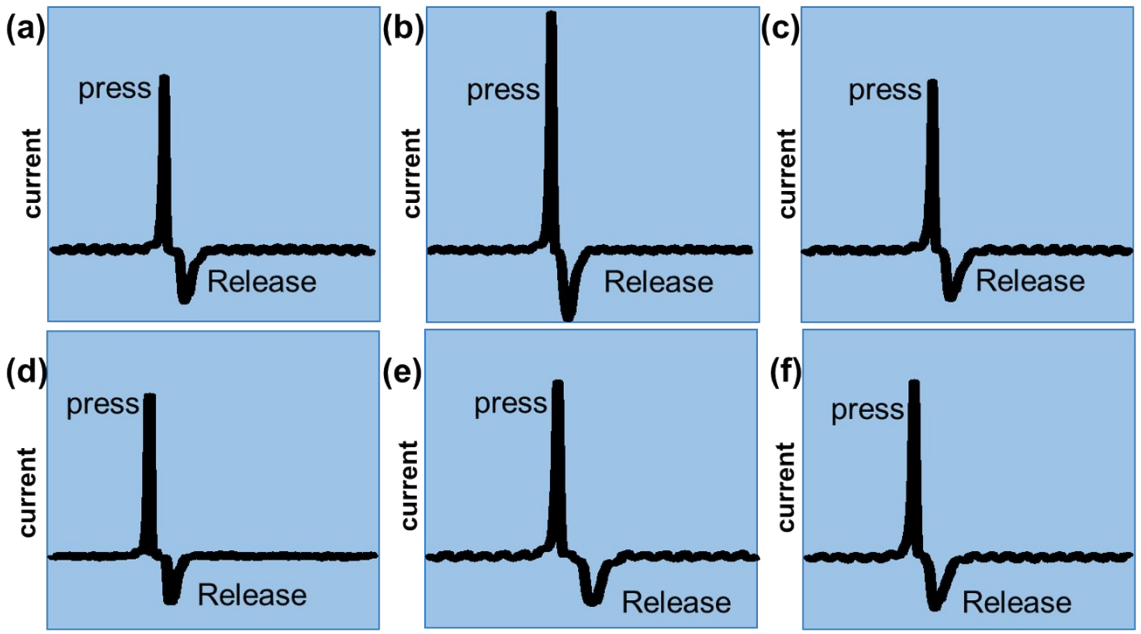

Figure S12. Triboelectric current signals of TENGs with (a)red PVDF-black PTFE, (b) red PDMS-black PVDF, (c) red PE-black PDMS, (d) red PE-black PC, (e) red PI-black PC, (f) red PET-black PI, where red and black refer to the red probe and black probe of the electrostatic meter respectively.

Pressure （N）	Voltage （V）
4	254
10	257
15	259
22	260
27	262

Table S1. The impact of force magnitude on the power output.